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What is climate control in a car

As car prices go up, climate control becomes more of a standard feature. But what exactly is climate control? It's essentially an advanced form of air con that lets you fine-tune your cabin temperature whatever the weather outside. Air con itself has become super common in new cars, but if you're shelling out more cash for a car, you're likely to get a system that lets you adjust the cabin temp to suit your needs. Climate control does exactly what it says - it lets you control the climate inside your car, no matter how hot or cold it is outside. It's like having a thermostat in your house, but instead of controlling the whole house, it just controls the temperature in your car. Now, let's take a look at how climate control works its magic. In older cars, air con was pretty basic and only used engine heat to warm up the air inside the cabin. But today, most new cars come with more advanced systems that can both heat and cool the air inside the cabin. It's like having your own personal weather control system in your car! The air conditioning system in your car can be identified by its engine note when it's idling. When activated, it draws power from the engine, usually around 4bhp, and causes a slight drop in revs, especially in cars with small engines. This may lead to poorer fuel consumption figures, but tests show that this effect is similar to driving with windows down. Using air conditioning can help keep your cabin cool when warm outside, but it also removes condensation from the air entering the car when it's raining or cold, reducing steamy windows. However, refrigerant loss over time can cause the system to pump out more condensation and make windows steam up. You may need to re-gas the AC system as part of a service. The main difference between air conditioning and climate control is that climate control allows occupants to set a specific temperature, which the system maintains automatically. This type of system often has an Auto setting that regulates airflow around the car to maintain the desired temperature. There are various types of climate control systems available, including cabin climate control with two temperature controls for left and right sides of the car. Some systems may limit temperature differences between sides to avoid stressing the HVAC system. Air conditioning has been available in cars since the late 1930s, but its development has come a long way. Originally offered as an option by defunct American luxury brand Packard, air-conditioning systems have undergone significant improvements over time. One notable innovation was Cadillac's introduction of an automatic climate control system called 'Comfort Control' in 1964. This system used three temperature sensors to maintain the desired cabin temperature based on external and internal conditions. Today, most cars feature advanced automatic climate control systems, rendering manual adjustments a thing of the past. Some models also include features like cabin pre-heating, allowing drivers to warm or cool their vehicles before entering. This functionality is particularly useful for electric and hybrid vehicle owners, who can set a temperature and timer to optimize battery charge and extend driving range. The increasing popularity of advanced climate control systems has transformed the driving experience, making it more comfortable and convenient for passengers. While some may argue that this shift has eliminated the need for discussion between drivers and passengers about cabin temperatures, many modern vehicles still come equipped with 'Sync' buttons that allow users to set all areas to a uniform temperature. In modern cars, climate control systems are designed with multiple "zones" that allow drivers and passengers to set their own temperatures. But how do these systems work? The answer lies in a complex network of sensors and microprocessors. Typically, car manufacturers use at least two temperature sensors - one to detect external air temperature and another to measure the interior temperature - along with humidity sensors to maintain a dry environment. Some cars also feature solar sensors that detect sunlight and adjust the A/C system accordingly. Additionally, some models link their systems to onboard GPS for weather forecasting. All this data is analyzed by a microprocessor to determine whether to heat or cool the car, as well as fan speed and airflow. Once the desired temperature is reached, the system can operate at a reduced power level to maintain it. The concept of "zones" allows drivers and passengers to set their own temperatures independently, with dual-zone systems typically allowing the driver and front passenger to control their zones separately. Car manufacturers are now incorporating various features to maintain interior air quality. Unlike previous assumptions of separate zones with distinct temperatures, recent studies suggest a more plausible scenario: slight temperature differences between areas within the car (around 2-3°C). For instance, one zone could be at 21°C while another is at 23°C. Air quality systems are gaining traction in high-end vehicles. These innovative features typically include an outside air sensor that detects pollution levels. If poor air quality is detected, the system automatically recirculates cabin air and switches back to drawing fresh air when conditions improve. This feature can be particularly useful when driving through congested areas or tunnels. Some advanced air quality systems also integrate air cleaning technologies using HEPA filters, which significantly reduce particulate matter (PM2.5) in the air. The Bioweapon Defense Mode on Tesla's Model S, X, and Y is an example of this technology. Volvo, Jaguar Land Rover, and Volkswagen are also incorporating similar features to ensure excellent interior air quality even in smoggy environments. Other manufacturers are experimenting with technologies such as cabin air ionisation and charcoal filters to clean the air entering the vehicle. These features can be especially beneficial during bushfire season or when exposed to pollution from hazard reduction burns. One of the most sophisticated climate control systems available is Lexus' Climate Concierge, found in flagship models like the LS sedan. This advanced system uses infrared sensors to monitor occupants' body temperature and combines A/C operation with seat heating/cooling and steering wheel heating for optimal comfort. Recent innovations also include voice command integration to operate the A/C system. Vehicle pre-conditioning, which allows remote A/C control via a smartphone app, is another recent development. This feature ensures that the car's interior reaches the desired temperature before entering the vehicle, making it particularly useful on extremely hot or cold days. Climate control systems in modern cars provide greater temperature control than basic air conditioning, allowing drivers to tailor their cabin temperature to specific needs. It's activated, you'll notice a slight decrease in engine revs by around 4bhp, as the system takes power from the engine to operate. Additionally, fuel consumption will slightly worsen, comparable to driving with windows down, which tests have shown has a similar impact on economy. However, air conditioning provides several benefits, including keeping your cabin cool and removing condensation when it's raining or cold outside. This reduces the risk of foggy windows. While AC can lose effectiveness over time, regassing by a dealer, Kwik Fit, or independent garage is a simple solution. The key difference between air conditioning and climate control lies in the latter's ability to maintain a set temperature, rather than just cooling the air. Climate control often features an Auto setting that automatically regulates airflow to maintain the desired temperature. Beyond standard cabin climate control, there are various types of HVAC systems available, including dual-temperature controls for left and right sides of the car, or separate zones for front and rear seating areas. Open season for high-end car features has arrived, and it's about time we discussed one of them: four-zone climate control. This fancy feature splits the cabin into four areas, each tailored to one of the main seats in a luxury vehicle. Typically found in top-of-the-line cars like limousines and expensive SUVs, this system lets drivers customize temperatures for rear passengers while keeping everything synced with a single button press - perfect for those with a need for order. If you own an electric or plug-in hybrid car, you might already be familiar with cabin pre-heating. This convenient feature allows owners to warm or cool the cabin before getting in, setting a temperature and timer for optimal comfort. While it's a nice-to-have on regular cars, it's essential for EVs and hybrids as it helps preserve battery life by warming up the cabin while charging from an external power source. To learn more about advanced driving features like cruise control, check out our latest guide.